SCIENCE & EDUCATION Impact

Benefits From the USDA/Land-Grant Partnership

Safe Food: Field to Fork

Managing the check points en route to safe eating.

An estimated 6.5 million to 33 million illnesses and 9,000 deaths can be attributed to foodborne diseases annually. The United States spends $5 billion to $6 billion per year combating just eight food-related diseases. The U.S. Department of Agriculture (USDA)/Land-Grant partnership is paying off, however, as research and education programs work together to make food safer for everyone.

Payoff

- **Making eggnog safer.** Researchers at **North Carolina State** and **Purdue** are developing a low-temperature heating process to kill *Salmonella* in shelled eggs. This would preserve the quality of the eggs while allowing people to enjoy eggnog, sunny-side-up eggs, homemade hollandaise sauce, and other items made with eggs that may not be fully cooked. If just 10 percent of Indiana's annual total of 4 billion eggs were treated to reach this niche market, egg producers could add an estimated $40 million to the state's economy each year.

- **Irradiation works.** Irradiation of meat controls foodborne illness, potentially reducing deaths by 2,250 and illnesses by 1 million in the United States each year. **Iowa State** research with commercial-size food irradiators showed this technology can reduce microbial contamination in meat and poultry, nearly eliminating the risk of foodborne illness and doubling a product's shelf life. **Kansas State's** work with the steam pasteurization system will help beef processors meet new microbiological standards, and a small-scale version of the unit will help smaller slaughter operations compete.

- **Keeping food safe for children.** Kids are at higher risk when exposed to unsafe food. **Delaware, Georgia, Iowa State, Louisiana State**, **Pennsylvania,** and **Utah** developed food safety programs for daycare providers, with training on the causes of foodborne illness, food storage, proper temperatures, food preparation, and sanitary practices.

RESEARCH, EDUCATION, AND EXTENSION AT WORK

Science & Education Impact

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- **Dishing up safe grub.** Americans eat nearly half of their meals away from home, making safe food handling in restaurants, schools, and at special events very important. In **Delaware,** training helped one restaurant pass public health department inspections after a series of poor ratings. Thanks to **Iowa State,** 84 percent of participants in a training program now have increased knowledge of food safety and proper food-handling practices. Training programs conducted by **Cornell, Georgia, Louisiana State, Nebraska, Purdue, Tennessee,** and **Washington State** also help assure food safety.

- **Coping with canning.** As more people try canning for both aesthetic and nutritional reasons, the need for sound information becomes critical. At **Oregon State,** the Master Food Preserver Program prepares volunteers to answer food safety and preservation questions. Last year, 194 volunteers donated nearly 9,000 hours to reach 25,000 people. One alert volunteer noticed that a recipe in an Oregon newspaper had omitted vinegar, potentially causing deadly botulism poisoning. The paper immediately published a correction. **Utah State** discovered that 10 percent of 1,334 pressure canners were defective, potentially putting 133 families at risk of botulism.

- **Safety starts on the farm.** Researchers at **Purdue** found a surprising source of *Salmonella*. According to conventional wisdom, hogs raised using the best disease-controlling techniques would contain less *Salmonella*. But because some other bacteria were not in these hogs to compete with it, *Salmonella* flourished. Now, farmers can adjust their management practices to address this issue. **Maryland** researchers found that "bio-films" are created by bacteria that resist current cleaning methods for poultry trucks. A new decontamination system should reduce contamination of poultry before processing.

- **Have your oysters and eat them too.** *Vibrio vulnificus* is the name of a nasty bacterium, found naturally in oysters, that multiplies fast in hot weather. **Louisiana State** responded by developing a pasteurization method that kills the bacterium without changing the quality of the oysters. Had this system been in place, it could have prevented 69 deaths from 1992 to 1996.

- **Making the process safer. Ohio State** researchers discovered that two preservation methods are better than one. Combining pulsed electric field technology with common food preservatives delivered a knockout punch to *E. coli* without altering food quality. **Texas** researchers have found that the right level of sodium lactate will extend the shelf life of meat products by decreasing microbial growth and foodborne pathogens.

- **Safer cider that tastes good, too.** The deadly bacterium *E. coli* reared its ugly head in apple cider. Now, researchers at **Virginia Tech** are using ultraviolet light energy to improve the safety of cider without affecting its unique taste. **Cornell** and **Ohio State** are looking at flash pasteurization methods to achieve the same end. **Illinois** helped train producers in fruit selection, food safety, and sanitation procedures.

- **Completing the circle at home.** Food safety techniques from farm to grocery store don't mean a thing without proper handling and cooking techniques at home. **Oregon State** reached nearly 7,000 households with the "Keep It Clean," "Cook It Well," and "Cool It Soon" message. **Nebraska** created a game called "Don't Get Bugged by a Food-borne Illness" that has been sold in all 50 states. A participant in a **Tennessee** program said, "I have cooked all my life, and I have always thawed my food on the counter. However, I now know that this is a dangerous practice." In **Washington,** 90 cases of *Salmonella* food poisoning were linked to queso fresco. This traditional homemade cheese, popular in the Hispanic community, is made with raw, unpasteurized milk. **Washington State** scientists modified a recipe so cheese makers could use pasteurized milk instead.

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